CLAIMS

1. A multiple beam generator for use in a scanning system, said generator comprising:

an acousto-optic deflector (AOD) which during use receives a laser beam and generates a deflected beam, the deflection of which is determined by an AOD control signal;

a diffractive element which generates an array of input beams from the deflected beam; and

a control circuit which during operation generates the AOD control signal and varies a characteristic of the first control signal to account for errors in the scanning system.

2. The generator of claim 1 wherein the control circuit receives a feedback signal that is a measure of a deflection error of an output beam array from a desired position, said output beam array derived from said input beam array and wherein the control circuit generates the AOD control signal to reduce the deflection error.

3. The generator of claim 1 further comprising an acousto-optic modulator (AOM) which receives the array of beams a separately modulates each of the received beams in accordance with a second control signal to produce an output beam array.

4. The generator of claim 3 wherein the control circuit includes a table of corrections which the control circuit uses to generate the AOD control signal.

5. The generator of claim 4 wherein said table stores corrections for stripe position errors associated with the scanning system.

6. The generator of claim 5 wherein said table stores corrections for variation in beam velocity over a scan line within the scanning system.

7. The generator of claim 5 wherein said table stores corrections for facet-by-facet position error attributable to a polygon mirror in the scanning system.

8. The generator of claim 4 wherein said table stores corrections for intensity errors associated with the scanning system.

9. The generator of claim 8 wherein said table stores corrections for scan-line intensity variations within the scanning system.

10. The generator of claim 8 wherein said table stores corrections for intensity variation from stripe deflection across a sound field within the AOM.

11. The generator of claim 8 wherein said table stores corrections for intensity variation due to reflectivity variations within a polygonal scanning element that is part of the scanning system.

12. A beam deflection control system comprising:

a generator that during operation generates a first array of beams;

a scanning element that during operation receives a second array of beams derived from the first array of beams and scans the second array of beams over a scan region;

a deflection measurement circuit including a chevron pattern detector across which one of the beams of the scanned array of beams scans during operation, said chevron pattern detector generating a signal that is a measure of the location of the scanned array of beams in a direction transverse to the scan direction, said chevron pattern detector including an angled slit across which said one of the beams passes; and

a control circuit which during operation receives a feedback signal from the deflection measurement circuit that is a measure of a deflection error between the output beam array and a desired position, wherein the control circuit generates the first control signal to reduce the deflection error.

13. The system of claim 12 wherein said generator comprises:

an acousto-optic deflector which during use receives a laser beam and generates a deflected beam, the deflection of which is determined by a first control signal; and

a diffractive element which generates the first array of beams from the deflected beam.

14. The system of claim 12 wherein the chevron pattern detector also includes a vertical slit across which the said one of the beams passes.

15. The system of claim 12 wherein the chevron pattern detector also includes a vertical slit and a plurality of angled slits across which the said one of the beams passes, said first-mentioned angled slit being one of said plurality of angled slits.

16. The system of claim 12 wherein the chevron pattern detector also includes a vertical slit, a first plurality of angled slits and a second plurality of angled slits symmetrically oriented with respect to the first plurality of slits, wherein the said one of the beams passes over the vertical slit and the first and second plurality of slits and wherein said first-mentioned angled slit is one of said first plurality of angled slits.

17. The system of claim 12 wherein the chevron pattern detector is characterized by a path along which the said one of the beams passes during operation and wherein the chevron pattern detector further includes a detector region along said path for determining whether the beam is properly aligned over said path.

18. A method of measuring deflection of scanned beams, said method comprising:

scanning a selected beam of an array of beams over a first zone and scanning multiple beams of said array of beams over a second zone;

while scanning over the first zone, passing the selected beam over a chevron pattern detector to generate a detection signal; and

using the detection signal to determine a position of the selected beam in a direction that is transverse to the scanning direction.

19. The method of claim 18 wherein the detection signal is a timing signal and using the detection signal involves measuring a duration of the timing signal to determine the position of the selected beam.

20. The method of claim 18 wherein the chevron pattern detector also includes a vertical slit and an angled slit and wherein the scanning involves passing the selected beam over the vertical slit and the angled slit, said vertical slit being oriented orthogonal to the direction of movement of the selected beam and the angled slit being oriented at a non-orthogonal angle relative to the direction of movement of the selected beam.

21. The method of claim 18 wherein the chevron pattern detector also includes a vertical slit and a plurality of angled slits and wherein the scanning involves passing the selected beam over the vertical slit and the plurality of angled slits, said vertical slit being oriented orthogonal to the direction of movement of the selected beam and the plurality of angled slits being oriented at a non-orthogonal angle relative to the direction of movement of the selected beam.

22. The method of claim 18 wherein the chevron pattern detector also includes a vertical slit, a first plurality of angled slits and a second plurality of angled slits, wherein the scanning involves passing the selected beam over the vertical slit and the first and second plurality of angled slits, said vertical slit being oriented orthogonal to the direction of movement of the selected beam and the first plurality of angled slits being oriented at a non-orthogonal angle relative to the direction of movement of the selected beam and the second plurality of angled slits is symmetrically oriented with respect to the first plurality of angled slits.

23. The method of claim 18 wherein the chevron pattern detector is characterized by a path over which the selected beam passes during operation and wherein the chevron pattern detector further includes a detector region along said path for determining whether the selected beam is properly aligned to pass over said path, said method further comprising detecting whether the selected beam is passing over the detector region.